(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 741 411 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
03.01.2018 Bulletin 2018/01

(43) Date of publication A2:
11.06.2014 Bulletin 2014/24

(21) Application number: **13195152.7**

(22) Date of filing: **29.11.2013**

(51) Int Cl.:
H02M 7/00 *(2006.01)* ***H02M 1/14*** *(2006.01)*
H02M 1/44 *(2007.01)* ***H02M 5/42*** *(2006.01)*
H02M 5/458 *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **04.12.2012 JP 2012265118**

(71) Applicant: **Samsung Electronics Co., Ltd.**
Gyeonggi-do 443-742 (KR)

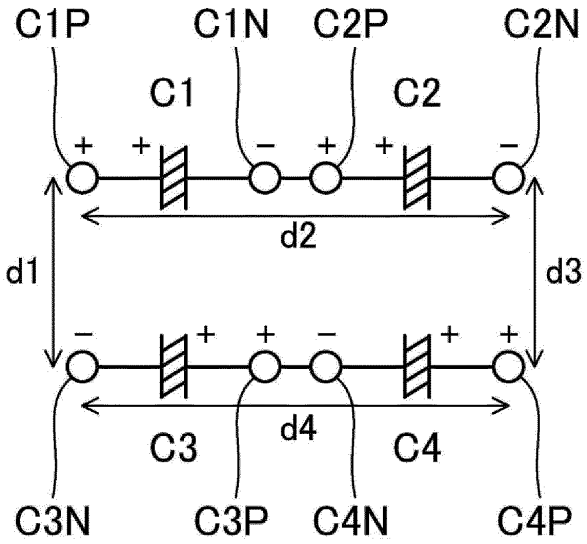
(72) Inventor: **Mori, Keisuke**
Osaka-bu (JP)

(74) Representative: **Walaski, Jan Filip**
Venner Shipley LLP
200 Aldersgate
London EC1A 4HD (GB)

(54) Power conversion apparatus with reduced inductance of the conductors coupling the electrolytic capacitors in the intermediate circuit

(57) Disclosed is a power conversion apparatus with reduced inductance of conductors coupling capacitors. The power conversion apparatus includes a smoothing circuit having first and second electrolytic capacitors (C1, C2) connected to each other in series and third and fourth electrolytic capacitors (C3, C4) connected to each other in series. The distance (d1) between a positive terminal (C1P) of the first electrolytic capacitor (C1) and a negative terminal (C3N) of the third electrolytic capacitor (C3) is shorter than the distance between the positive terminal (C1P) of the first electrolytic capacitor (C1) and a positive terminal (C4P) of the fourth electrolytic capacitor (C4). The distance (d3) between the positive terminal (C4P) of the fourth electrolytic capacitor (C4) and a negative terminal (C2N) of the second electrolytic capacitor (C2) is shorter than the distance between the positive terminal (C4P) of the fourth electrolytic capacitor (C4) and the positive terminal (C1P) of the first electrolytic capacitor (C1).

FIG. 6



EP 2 741 411 A3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 13 19 5152

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2002/034089 A1 (MORI KAZUHISA [JP] ET AL) 21 March 2002 (2002-03-21) * abstract * * figures 1,3,6(a),6(b),6(c),6(d),6(e) * * paragraph [0041] * -----	1,3,4 2	INV. H02M7/00 H02M1/14 H02M1/44 H02M5/42 H02M5/458
Y	EP 2 099 117 A2 (HITACHI LTD [JP]) 9 September 2009 (2009-09-09) * paragraph [0001] * * figures 1,2,3 * * column 3, lines 40-49 * -----	2	

TECHNICAL FIELDS SEARCHED (IPC)

H02M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 November 2017	Zettler, Karl-Rudolf

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 19 5152

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-11-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002034089 A1	21-03-2002	JP 3906440 B2	18-04-2007
		JP 2002084766 A	22-03-2002
		US 2002034089 A1	21-03-2002
EP 2099117 A2	09-09-2009	CN 101527523 A	09-09-2009
		EP 2099117 A2	09-09-2009
		JP 4597202 B2	15-12-2010
		JP 2009219175 A	24-09-2009

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82